5.0 Falls City, Texas, Disposal Site

5.1 Compliance Summary

The Falls City Disposal Site, inspected on January 15, 2003, was in excellent condition. Maintenance items included continued grass management, control of small trees and shrubs growing in the riprap on the side slopes, and minor fence repairs. Results of ground water monitoring were consistent with results from previous years and indicate essentially steady-state conditions. No cause for a follow-up or contingency inspection was identified.

5.2 Compliance Requirements

Requirements for the long-term surveillance and maintenance of the Falls City, Texas, Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I disposal site are specified in the *Long-Term Surveillance Plan for the Falls City, Texas, Disposal Site* (DOE/AL/62350–187, Rev. 3, U.S. Department of Energy [DOE], Albuquerque Operations Office, July 1997) and in procedures established by the DOE office at Grand Junction to comply with requirements of Title 10 *Code of Federal Regulations* Part 40.27 (10 CFR 40.27). These requirements are listed in Table 5–1. Additional ground water monitoring began in accordance with the Ground Water Compliance Action Plan, which was submitted to the U.S. Nuclear Regulatory Commission on March 19, 1998 and received concurrence on September 18, 1998.

Table 5–1. License Requirements for the Falls City, Texas, Disposal Site

Requirement	Long-Term Surveillance Plan	This Report
Annual Inspection and Report	Sections 6.0 and 10.0	Section 5.3.1
Follow-up or Contingency Inspections	Section 7.0	Section 5.3.2
Routine Maintenance and Repairs	Section 8.0	Section 5.3.3
Ground Water Monitoring	Section 5.0 and the GCAP[a]	Section 5.3.4
Corrective Action	Sections 5.0 and 9.0	Section 5.3.5

[a]Ground Water Compliance Action Plan.

5.3 Compliance Review

5.3.1 Annual Inspection and Report

The site, located east of Falls City, Texas, was inspected on January 15, 2003. Results of the inspection are described below. Features and photograph locations (PLs) mentioned in this report are shown on Figure 5–1. Numbers in the left margin of this report refer to items summarized in the Executive Summary table.

5.3.1.1 Specific Site Surveillance Features

Access Road, Entrance Gate, Fence, and Signs—Access to the site is through a vehicle gate directly off of a public right-of-way (Farm-to-Market Road 1344). The main entrance gate and another vehicle gate on the same side of the property were locked and in excellent condition. A barbed wire fence, set on the property boundary, was in generally good condition except along the northwest boundary where the fence leans outward above a steep bank. The fence seems stable in

this position and is sufficient to keep cattle and casual intruders out. It does not need to be replaced yet. The top two wires were tightened near perimeter sign P33. A deer trail was present
5A near perimeter sign P35 where a fence strand was broken; the strand will be repaired in 2004. There is no indication that livestock have ever entered the site; in fact, no livestock were visible near the disposal site. Repair will be increasingly necessary as this fence predates construction of the disposal cell. Barbed wire has corroded and is easily broken by animals or by the vegetation growing in the fence line. However, in the absence of livestock pressure, there is little justification for replacing the fence.

The entrance sign, located at the main entrance gate, was in excellent condition. There are 64 perimeter signs along the site boundary, and all signs were present and in good condition.

Site Markers and Monuments—The two site markers, three survey monuments, and two boundary monuments were undisturbed and in excellent condition.

Monitor Wells—Monitor wells MW−0709 and MW−0858 were locked and in excellent condition. Wells in the monitoring network were inspected and sampled during October 2002, at which time all sampled wells were secure and in excellent condition.

5.3.1.2 Transects

To ensure a thorough and efficient inspection, the site was divided into three areas referred to as transects: (1) the top and side slopes of the disposal cell; (2) the site perimeter; and (3) the outlying area.

Top and Side Slopes of the Disposal Cell—The top of the disposal cell is covered with well-established coastal Bermuda grass and was in excellent condition. The grass is cut and baled by a
5B local hay farmer, and numerous bales were on top of the cell at the time of the inspection. There are no trees or woody shrubs on top of the disposal cell; grass cutting appears to be an effective control of these plants. Some woody species were present along the edge of the transition zone where the grass is not cut because of close proximity to the riprap. These shrubs require periodic cutting and treatment with herbicide.

Locally heavy precipitation received in the week prior to the inspection saturated the ground in the region. The soil on the cell top was saturated with water, and standing water (up to 2 inches deep) was noted at one location along the northwest edge of the cell top. Water was actively draining from the cell cover and the accumulation was not considered to be a problem. However, the location of the standing water will continue to be inspected to ensure the cover sheds water as designed.

The side slopes are covered with riprap and were in excellent condition. As noted during previous inspections, small amounts of fractured riprap were observed along the side slopes. The fractured riprap apparently is an artifact of quarrying and placement of the rock and does not appear to be degrading. However, DOE continues to visually monitor the riprap for indications of rock degradation.

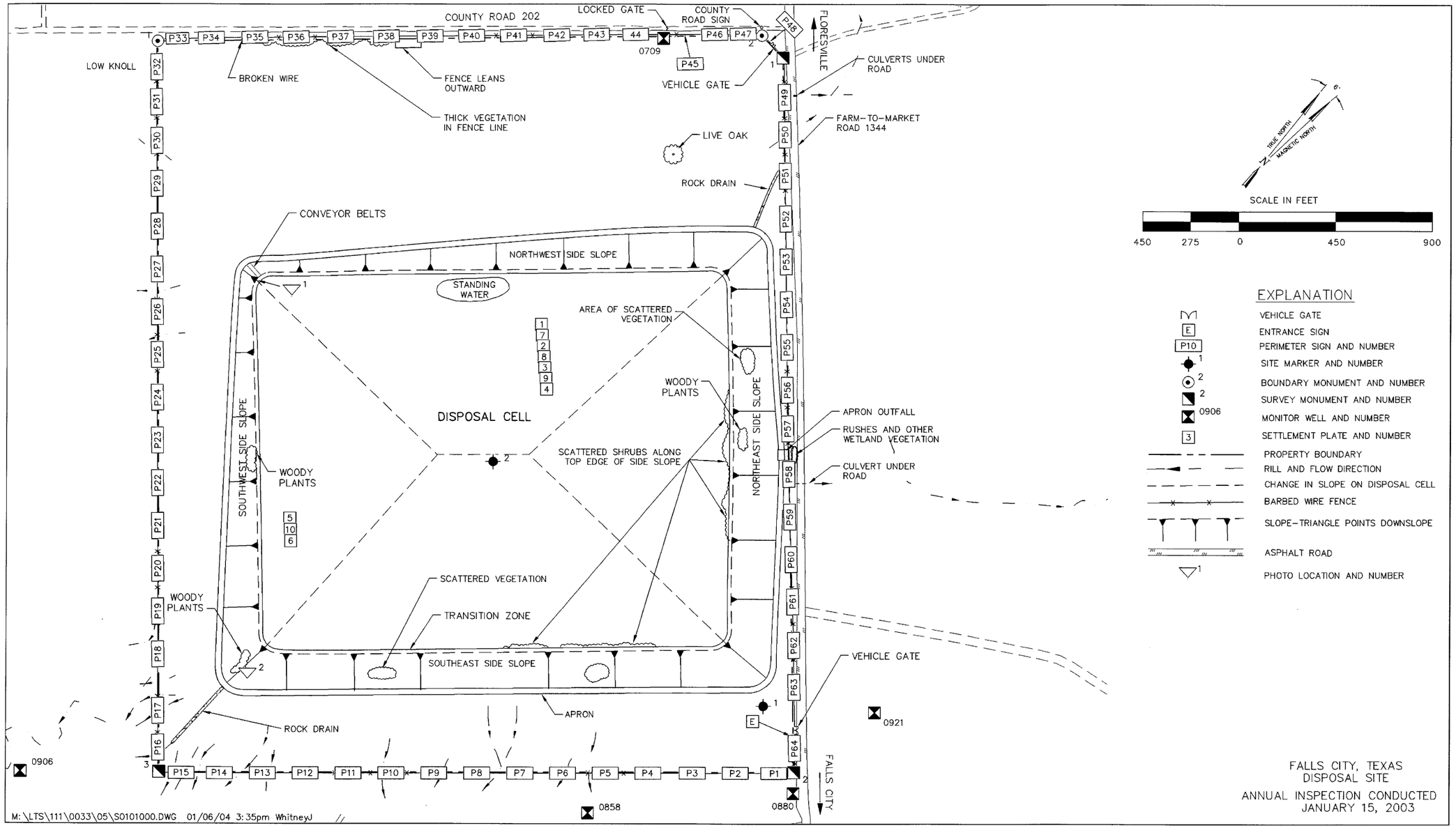

Figure 5–1. 2003 Annual Compliance Drawing for the Falls City, Texas, Disposal Site

Two tracks of steel-belted rubber conveyor belt material were placed on the west corner of the disposal cell by the hay farmer (PL–1). The conveyor belt material appears to keep the rocks from being overturned as farm equipment is driven up and down the side slope, and does not adversely affect the function of the disposal cell. The material may be left in place as long as it does not fragment into smaller pieces and become distributed as litter.

Most vegetation on the side slopes was dead due to herbicide treatment; however, a few woody plant species were found growing along the side slopes (PL–2). Greasewood and similar species are concerns because they are deep-rooted. Vegetation control will continue on the side slopes.

Site Perimeter—The area between the fence and the toe of the disposal cell is covered with well-established grass, primarily Kleingrass with some coastal Bermuda grass. Coverage was good and the turf appeared healthy and well cared for. Grass is managed by cutting and baling two or three times each year, depending on the weather. The cutting and baling process is clean and thorough, and appears to be an effective control against the growth of trees or other woody plants. Grass was left uncut along the fence, along rock drains, and around the site markers.

Water was actively flowing in the north and south rock drains due to recent heavy rainfall. Although the flow rate was low, active drainage from the cell cover was evident. Grass growing in both drains, as noted in previous inspections, was not impeding the flow of water draining from the cell. Water was contained within the drains and there was no evidence of large pools of water impounded by grass encroachment. The apron outfall, midway along the northeast side slope, is not yet affected by grass encroachment. Grass in the rock drains may actually assist in dissipating the energy of site runoff and may, therefore, be a desirable feature.

Outlying Area—The area outward for a distance of 0.25 mile from the site boundary was visually inspected. No development or disturbance that could affect the site was evident. State-owned land east of the disposal site has been placed on the market for sale. Observers from the Texas Department of Health verified that the property had not yet sold. Potential land use changes by future owners will be monitored.

5.3.2 Follow-Up or Contingency Inspections

No follow-up or contingency inspections were required in 2003.

5.3.3 Routine Maintenance and Repairs

Continued grass cutting and bailing on the cell top and between the cell and the site perimeter, control of shrubs growing in the riprap on the side slopes, and minor fence repairs were performed in 2003.

5.3.4 Ground Water Monitoring

DOE monitors ground water at the Falls City site as a best management practice to: (1) demonstrate the initial performance of the disposal cell, and (2) ensure that potential users of ground water downgradient from the site are not exposed to processing-related contamination. Ground water samples are collected from the Conquista and Deweesville sandstone units (uppermost aquifer), and from the underlying Dilworth aquifer.

5C

The disposal cell performance monitoring network consists of five monitor wells (MW−0709, 0858, 0880, 0906, and 0921) that are sampled semiannually as specified in the Long-Term Surveillance Plan. The ground water compliance monitoring network consists of five monitor wells (MW−0862, 0886, 0891, 0924, and 0963) that are sampled annually as specified in the Ground Water Compliance Action Plan. Ground water samples from the ten monitor wells are analyzed for 33 constituents, including ten which have maximum concentration limits specified in Table 1 to Subpart A of 40 CFR 192. The Long-Term Surveillance Plan identifies pH levels in ground water as the indicator for disposal cell performance on the basis of tailings pore-fluid chemistry. The monitor well network is shown on Figure 5–2.

Analytical results from 2003 generally are consistent with previous results and what would be expected of ground water conditions in a naturally mineralized area that has been impacted by uranium exploration and mining activities. Levels of pH have not varied significantly in recent years (Figures 5–3 and 5–4) and it does not appear that pH is a good indicator for what is occurring with concentrations of uranium or other select constituents in ground water. There is no statistical correlation between changes in pH and changes with the select constituents.

Uranium concentrations in ground water in the vicinity of the disposal cell are consistent with previous results with the exception of monitor well MW−0880, where concentrations continue to increase (Figure 5–5). This increase may be an indication of seepage from the disposal cell, as expected; there is no risk however, because ground water is not used in the area. Uranium in ground water in the compliance monitoring network has varied substantially in two wells (MW−0891 and MW−0924) since 1997 and exceeded the maximum concentrarion limit of 0.044 mg/L in three wells (MW−0891, 0924, and 0963) in 2003 (Figure 5–6). Concentrations of other analytes in ground water are similar to previous results.

Monitoring for the designated suite of analytes in ground water does not appear to be an effective means to assess the initial performance of the disposal cell because the area is affected by widespread ambient contamination (naturally occurring uranium mineralization) and uranium exploration and mining activities. Ground water in the uppermost aquifer at the site is in contact with the naturally occurring uranium deposits and associated minerals, and water that might leach from the disposal cell, either through transient drainage or percolation of precipitation through the cover, will be chemically similar and perhaps indistinguishable from ambient and otherwise impacted conditions. DOE is evaluating the ground water monitoring program at the site to determine if protectiveness can be demonstrated with reduced monitoring requirements, such as sampling fewer wells, analyzing fewer constituents, and sampling the cell performance wells annually instead of every 6 months. If so, DOE will revise the Long-Term Surveillance Plan for NRC concurrence. The revised plan would also recommend eliminating pH as an indicator for cell performance.

5D

Ground water levels in monitor wells near the disposal cell have declined by several feet since construction, but have been relatively constant for the last several years. The water level data indicate that the falling water table in the vicinity of the cell was related to dissipation of the ground water mound beneath the disposal cell. Ground water levels at the compliance monitoring locations have remained relatively constant since monitoring began. Minor fluctuations in water level are likely caused by seasonal factors affecting recharge rates.

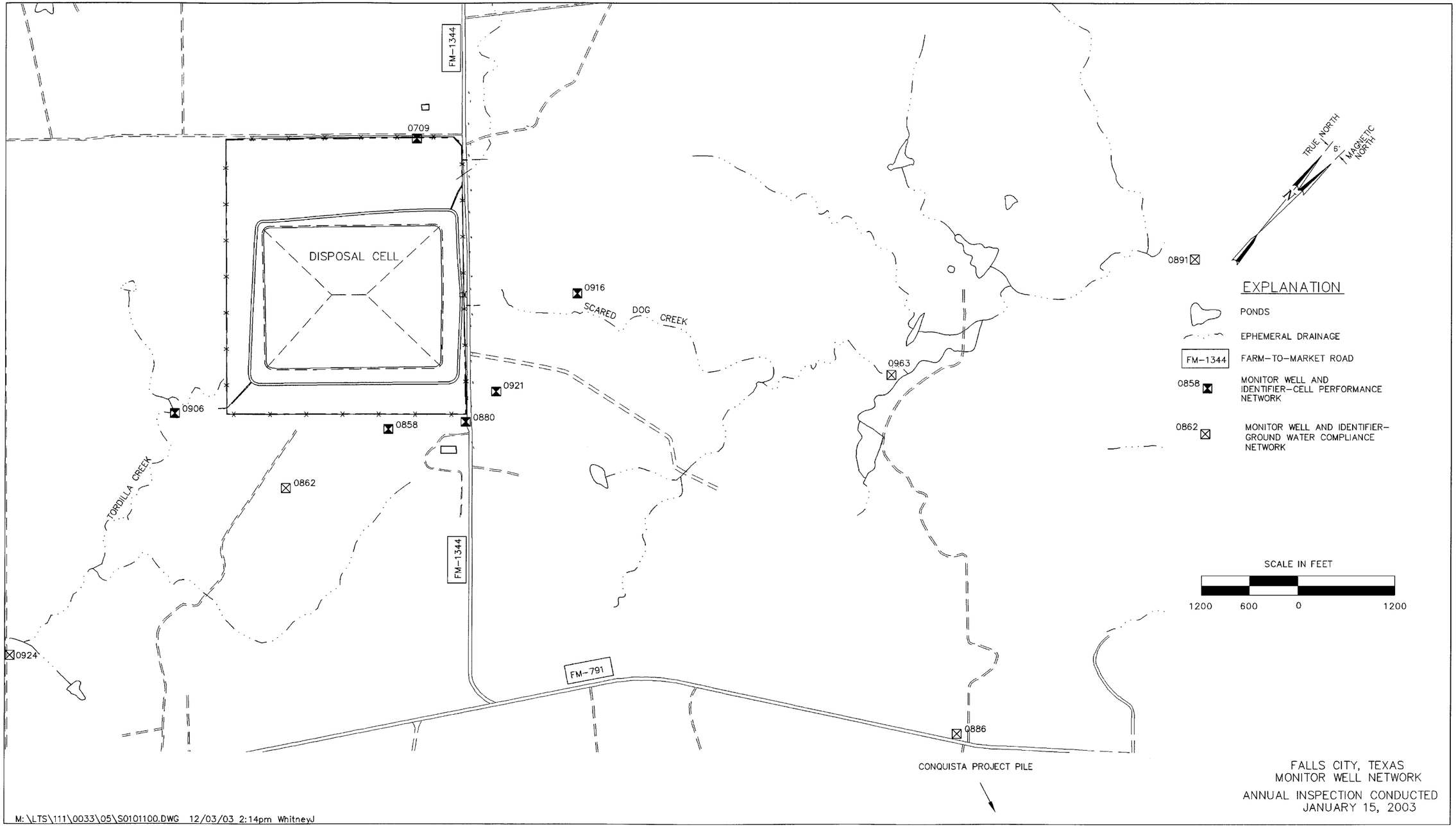

Figure 5–2. Monitor Well Network at the Falls City, Texas, Disposal Site

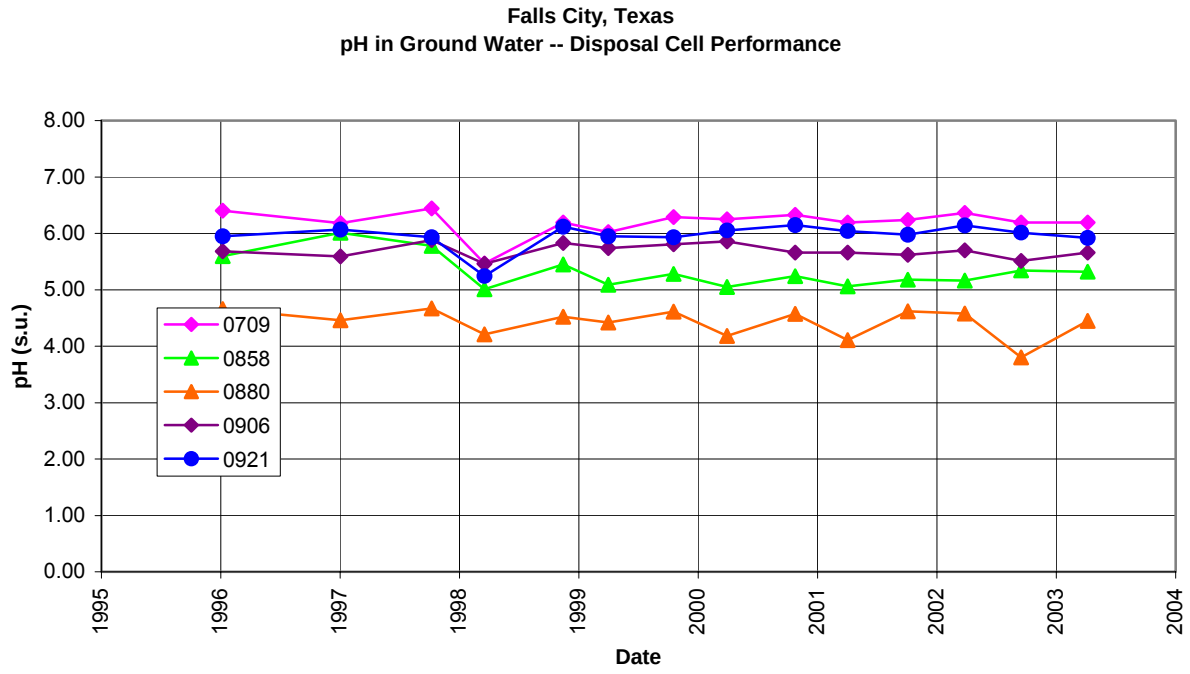

Figure 5−3. pH in Ground Water at Cell Performance Monitoring Locations at the Falls City, Texas, Disposal Site

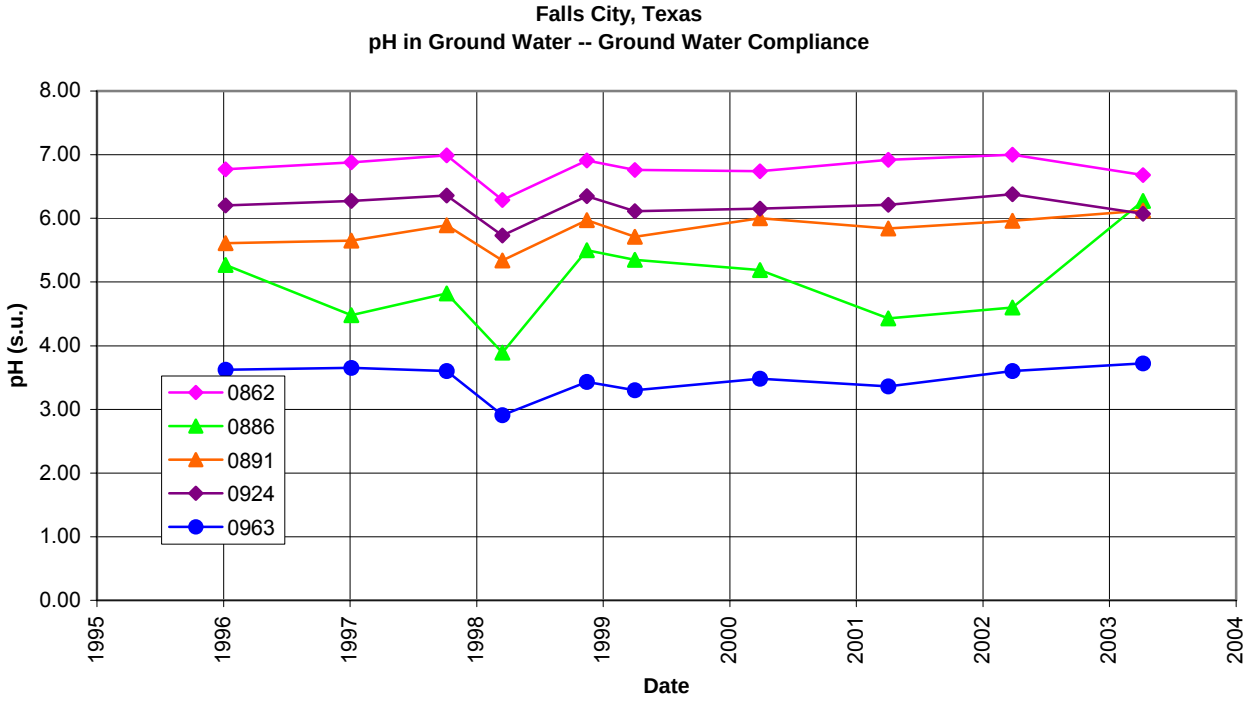

Figure 5−4. pH in Ground Water at Compliance Monitoring Locations at the Falls City, Texas, Disposal Site

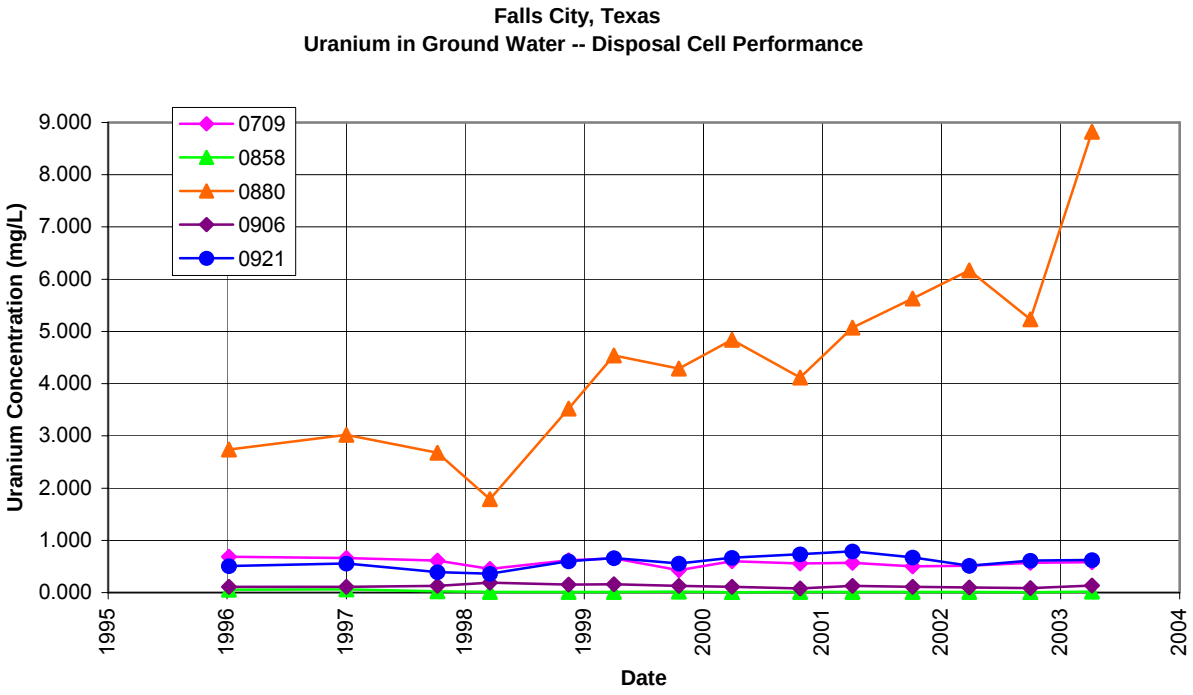

Figure 5−5. Uranium in Ground Water at Cell Performance Monitoring Locations at the Falls City, Texas, Disposal Site

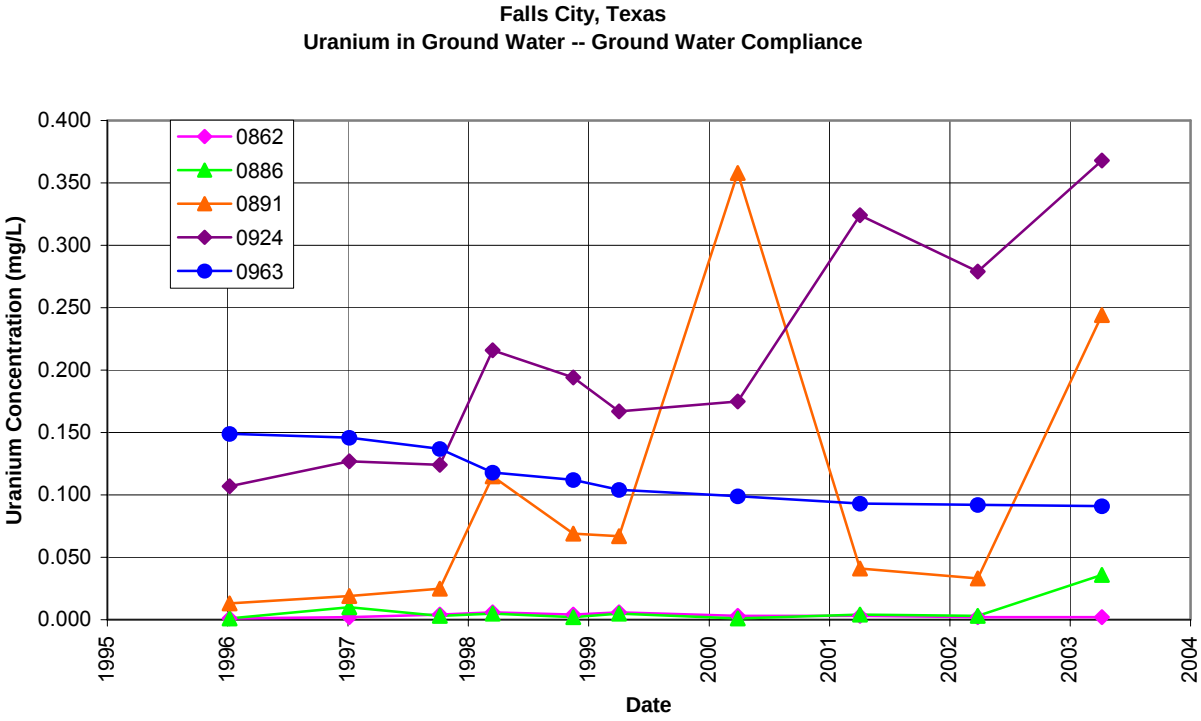

Figure 5−6. Uranium in Ground Water at Compliance Monitoring Locations at the Falls City, Texas, Disposal Site

5.3.5 Corrective Action

Corrective action addresses out-of-compliance or hazardous conditions that create a potential health and safety problem or that may affect the integrity of the disposal cell or compliance with 40 CFR 192.

No corrective action was required in 2003.

5.3.6 Photographs

Table 5–3. Photographs Taken at the Falls City, Texas, Disposal Site

Photograph Location Number	Azimuth	Description
PL−1	270	Conveyor belt material placed on the side slope at the west corner of the disposal cell.
PL−2	0	Woody plants on the side slope at the south corner of the disposal cell.

FCT 1/2003. PL–1. Conveyor belt material placed on the side slope at the west corner of the disposal cell.

FCT 1/2003. PL–2. Woody plants on the side slope at the south corner of the disposal cell.

End of current section